

Experience	Citadel • Quantitative Research Intern	Jun 2021 – Aug 2021
	NVIDIA • Performance Software Engineering Intern	Aug 2020 – Dec 2020
	<ul style="list-style-type: none">Reduced BERT/Megatron inference latency by up to 30% by enabling sparsity for TensorRT in C++Open-sourced sparse BERT in Python, democratizing the current fastest inference implementation	
	Uber ATG • Research Intern	Jan 2020 – Aug 2020
	<ul style="list-style-type: none">Improved object detection by 90% (AP) and motion forecasting by 22% (L2) of a self-driving neural net under realistic positional error, significantly improving safety for future ridersWrote a first author paper on the learned positional error correction system (accepted at CoRL)	
	Google Brain • Research Software Engineering Intern	May 2019 – Aug 2019
	<ul style="list-style-type: none">Unlocked K-FAC for over 370,000 users by implementing and open-sourcing automatic support for arbitrary neural network architectures and integrating it into the Keras ecosystem 🔗Enabled simple multi-node, multi-GPU/TPU training with efficient distributed operation placementDesigned, created, and open-sourced idiomatic, reproducible training recipes for users 🔗	
	John Hancock Financial • Data Science Intern	May 2018 – Aug 2018
	<ul style="list-style-type: none">Achieved a fraud detection rate of 63% through designing an unsupervised machine learning modelDeployed 25 fraud identifying heuristics in SQL that correctly flagged 100+ fraudulent claims	
	Sunnybrook Research Institute • Software Developer Intern	Jul 2017 – Aug 2017
Publications	<ul style="list-style-type: none">Improved MRI segmentation accuracy by up to 80% by via techniques like watershed and clusteringReduced time to contour MRI scans from ~5 hrs to ~40 mins through automation software	
	Nicholas Vadivelu , Mengye Ren, James Tu, Jingkang Wang, Raquel Urtasun. Learning to Communicate and Correct Pose Errors. In <i>Conference on Robot Learning (CoRL)</i> , Virtual, 2020 🔗	
	Pranav Subramani, Nicholas Vadivelu , Gautam Kamath. Enabling Fast Differentially Private SGD via Just-in-Time Compilation and Vectorization. In <i>NeuRIPS Privacy-Preserving Machine Learning Workshop</i> , Virtual, 2020 🔗	
Open Source	PyTorch Ignite : Improved metrics performance by up to 63% by designing and implementing async updates for distributed metrics with tests and documentation 🔗	
Leadership	Data Science Club Lectures : Designed and presented workshops on neural networks, machine learning, data cleaning, data visualization, MLOps, clustering, and more for 600+ students 🔗	
	WATonomous Design Team : Implemented real-time object detection in Tensorflow, OpenCV	
Projects	Competitive Pokemon Analysis : Scraped, visualized, analyzed, and modeled Pokemon data with random forests, boosting trees, and Markov chains in pandas, scikit-learn, and matplotlib 🔗	
	Thrive Life Simulator : Created a 3D ray-casting game engine from scratch for a dinosaur world simulation game in Java with object-oriented design and detailed documentation 🔗	
Education	University of Waterloo • Computer Science & Statistics (B. Math)	2017 – 2022
	Research Assistant (Advisors: G. Kamath Fall 2020, P. Poupart Fall 2019, L. Tan Winter 2019) Cumulative GPA: 3.94/4.00 - Dean's List	